Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

ground. In it the birds had determined to make their home and began their operations. It was a piece of wood dried and thoroughly seasoned, without the least sign of decay. In the first day's labor, which was chiefly done by the male, they succeeded in penetrating the limb about one and one-half inches. The hole was conical in shape, the outer circle being finished or made large enough to admit the birds; then it gradually tapered to the smallest point. The second day they commenced to beat out the hole of sufficient size and depth, which was slowly executed, as hardly a particle of wood could be seen to fly off before their bills; yet they persevered, and in eleven days they succeeded in completing it, by digging four inches below the aperture. Although it cost the birds much time to procure this tenement they had the satisfaction of knowing it was a good one. There was no smell of rotten wood about it, but was clean, dry, and smoothly finished. In this nest were reared five young woodpeckers. The male was mostly seen about the premises, and I think he did the most labor in preparing their abode. When the young appeared he was also diligent in procuring their food.

In winter the Downy Woodpecker sometimes digs a hole in some rotten tree for a retreat in stormy weather, and to roost in.

NATURAL CARVINGS.

BY PROF. A. M. EDWARDS.

MANY of our readers have doubtless often admired and wondered at the exquisite carved ivory work sent forth by that strange, industrious, and ingenious people, the Chinese. No examples of their manipulative skill have attracted more attention, perhaps, than those balls within balls, each one more elaborately decorated than the other, which, at one time, were by no means common out of China, and, therefore, brought very high prices. Of late years, however, the natural result of such a demand has been a plentiful supply, so that what were once rarities are now rather common ornaments in many houses. And although travellers in those foreign parts have come back and endeavored to dispel the mystery that has ever hung around these strange examples of a strange people, by telling us that they are not made from one piece of solid ivory, but carved separately and then moulded one over the other, yet they still remain objects of great interest and beauty.

What will the admiring collector say, however, when we tell him that there exist objects almost the counterpart of these Chinese ivory balls, the substance of which is glass-like, consisting of pure silica, or the same material as rock-crystal, but which are thus formed and fashioned by animals? And shall we increase his wonder by informing him that the beauty of these objects is very materially heightened by the fact that they are of minute dimensions, so small in fact, that they can only just be seen by the unaided eye, but when examined by sufficiently powerful magnifying glasses, exhibit a much greater variety of contour and sculpture than even the most fantastically formed oriental handiwork! These are known to scientific observers as *Polycistineæ*, and it is our intention to say a few words respecting these objects, concerning whose life-history, it is true, very little is known, but which form beautiful subjects for examination by means of the microscope.

In Plate 7 are represented a few of the many varied forms presented by the Polycistineæ, and what is with certainty known concerning them, we give as follows. First, however, so as to make the subject readily understood, we must say something with regard to two other classes of very simple animals, which, in the modern system of classification, are placed first in the list. These are the *Gregarinida* and *Rhizopoda*.

The *Gregarinida*, so called from a Greek word meaning a flock, on account of the mode of congregating together which these creatures possess, "are among the simplest forms of animal life of which we have any knowledge. They are the inhabitants of the bodies of other and larger creatures, and are commonly to be found in abundance in the alimentary canal of the common cockroach, and in earthworms. They are all microscopic, and any one of them, leaving minor modifications aside, may be said to consist of a sac, composed of a more or less structureless, not very well-defined, membrane, containing a soft semi-fluid substance, in the middle, or at one end, of which lies a delicate vesicle; in the centre of the latter is a more solid particle." This is the whole of the anatomy of these creatures, no mouth nor organs of any kind being apparent, so that they are placed at the point where it may be said that animal life dawns.

Next to the *Gregarinida*, in the scale of being, stand the *Rhizopoda*. "It seems difficult to imagine a state of organization lower than that of the *Gregarinida*, and yet many of the *Rhizopoda* are still simpler. Nor is there any group of the animal kingdom which more admirably illustrates a very well founded doctrine, and one which was often advocated by John Hunter, that life is the cause and not the consequence of organization; for, in these lowest forms of animal life, there is absolutely nothing worthy of the name of organization to be discovered by the microscopist, though assisted by the beautiful instruments that are now constructed. In the substance of many of these creatures, nothing is to be discerned but a mass of jelly, which might be represented by a little particle of thin glue. Not that it corresponds with the latter in composition, but it has that texture and sort of aspect; it is structureless and organless, and without definitely formed parts. Nevertheless it possesses all the essential properties and characters of vitality; it is produced from a body like itself; it is capable of assimilating nourishment, and of exerting movements. Nay, more, it can produce a shell; a structure, in many cases, of extraordinary complexity and most singular beauty." With the *Rhizopoda*, however, we have not to do at present; at some future time we shall take the opportunity of presenting our readers with some figures illustrating the grace exhibited in some of their hard tissues, or skeletons, as we may rightly term them.

Our Polycistineæ belong to a class of animals very nearly allied to those we have just been speaking of, and named by naturalists *Radiolaria*. This name has been given to them on account of the radiating arrangement of their parts, such parts being grouped, generally, around a common centre. These simple forms of life consist of microscopic masses of the semigelatinous substance we have already spoken of, and which is known as sarcode, meaning matter, as it were, on the way to become flesh, or protoplasm, from words designating the first form of matter. This term, however, is more commonly applied to the primitive tissue of the embryo or egg, out of which all subsequent organs are formed by a peculiar process, termed differentiation. From this mass of sarcode, constituting the whole mass of the animal proper of the Radiolarian organism, are protruded filaments, which are often extremely long and slender, and have been named *pseudopodia*, from two words meaning false feet; for these projections act as feet to the creature which throws them out, serving not only as organs of propulsion but to secure its prey and convey its food into the position for assimilation, and the building up of new tissues. This sarcode is such a peculiar kind of substance that the pseudopodia, as they are thrown out, may remain single or unite so as to form reticulations, or even coalesce into one mass around any particle of nutrient matter which they come in contact with. Scattered throughout it, generally, are to be found numerous yellow corpuscles, which multiply by fission, as it is called, or division, and to these parts a skeleton may be added, consisting merely of fine pin-like masses, or spicula, and these may be loose or united into a solid shell of great beauty of form and sculpture, as our Plate shows, or the skeleton is an assemblage of stout rods meeting in the middle of the creature, where a sac is found, and pointing in all directions. Here we see the applicability of the name given to the class of Radiolaria. No reproduction, by means of a true sexual process, has been as yet observed in any Radiolarian, and therefore here is opened a very promising and attractive field of research for the naturalist.

For the most that is known of the Polycistineæ, in their living condition, we are indebted to Prof. Müller, a celebrated German naturalist; but their remains, or shells, which are preserved in certain rocks in different parts of the world have been investigated and figured by the great microscopist of Berlin, Ehrenberg. He first discovered them in the mud brought up from the bed of the river Elbe, at Cuxhaven, and afterwards he found them in similar collections made in the antarctic seas. Prof. Bailey, one of the first and most enthusiastic American naturalists, also observed them, accompanied by other organisms, both animal and vegetable, in soundings, brought up by the lead from the bottom of the Atlantic Ocean, at depths of from 1000 to 2000 fathoms. So, also, the sea-bottom which has been procured from the Gulf of Mexico, off the coast of Florida, in some quantity, by means of a peculiar apparatus specially constructed for the purpose, is seen to be extremely rich in some of the more exquisite forms of these glassy shells. The microscope has thus revealed the existence of an universe of life at the bottom of the ocean. Of course the soundings made previous to the laying of the Atlantic Telegraph cable told the same story; here, as elsewhere, the sea-bed is overlaid with a carpet of the silicious remains of these beauteous atoms. During some past geological periods, however, it would seem that the Polycistineæ existed in much greater numbers than at the present time, for certain strata of considerable thickness are found, on examination, to be made up almost entirely of their silicious skeletons. Thus in the chalks and marls of Sicily and Greece, Ehrenberg detected vast numbers of forms; and at Oran, in the north of Africa, is an extensive stratum made up of the remains of Polycistineæ and similar organisms, both animal and vegetable. The famous infusorial strata of the States of Virginia and Maryland on our Atlantic coast, and of California on the Pacific, have, mixed with the minute plants known as Diatomaceæ, many very fine species of Polycistineæ, as well as the remains of sponges. The most remarkable deposit, however, of this character is that which makes up the greater part of the island of Barbadoes. This rock is, in many places, almost entirely formed of these glassy shells. The materials which led to this discovery, in the year 1846, were furnished by the geological researches of Sir. R. H. Schomburgh, hence one of the most beautiful species has been named after him.

The variety of form and outline which the Polycistineæ assume is very great, and always of great beauty and grace, while their minute dimensions make them, if possible, still greater sources of admiration to the student of nature who thus finding strata of rocks, of considerable thickness, made up of their delicate remains feels the truth of the words of the poet, when he says—

> "The dust we walk upon was once alive."

REVIEWS.

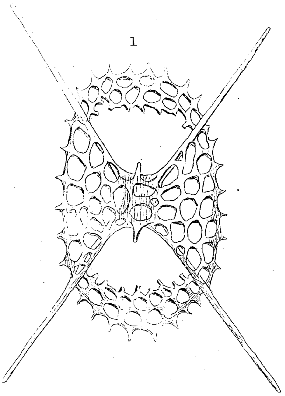
The Metamorphosis of Crabs.*—That insects undergo a metamorphosis was known by the ancients; the discovery that crabs and worms undergo a true metamorphosis, scarcely less striking than that of insects, is not more than thirty years old. The Nauplius form, here figured, was known to naturalists in the days of O. F. Müller (who wrote a

---

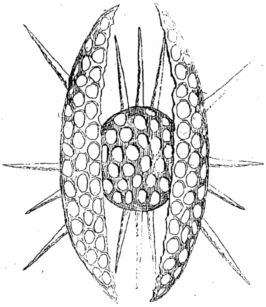
*Fur Darwin. Von Fritz Muller. With sixty-seven woodcuts. Leipzig, 1864. 8vo, pp. 91. Also recently translated and published in London by Van Voorst.

Pl. 7.

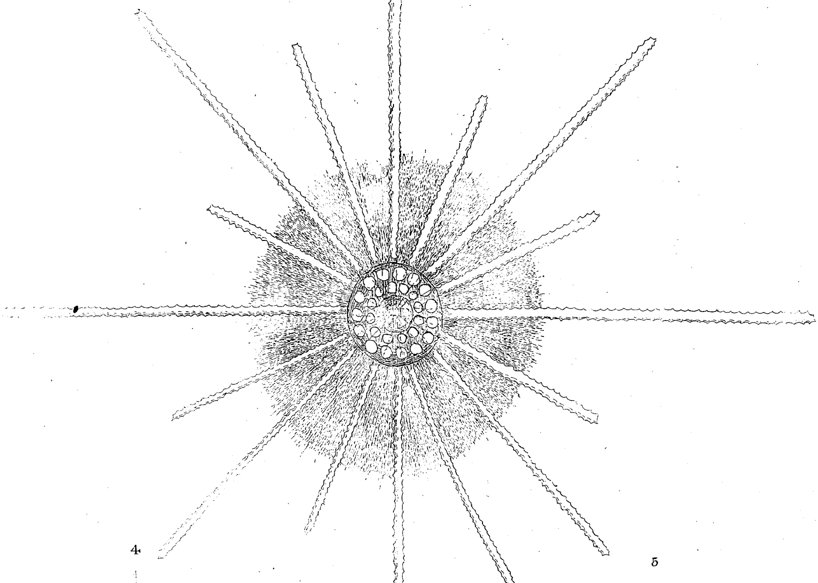
1



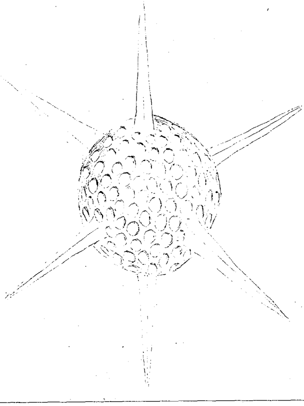
2



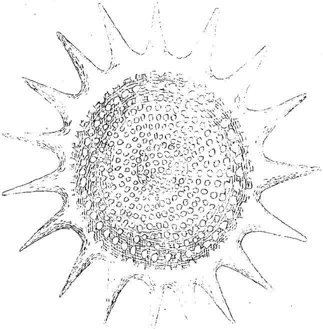
3



4



5



Address by the President, W. C. Endicott, Esq. Hon. J. H. Clifford replied on the part of Mr. Peabody, the founder of the Academy, who was unfortunately absent from the ceremonies owing to his continued ill health. Remarks were made by Mayor Cogswell; B. H. Silsbee, the President of the East India Marine Society; Henry Wheatland, President of the Institute, and by J. W. Foster, President of the American Association for the Advancement of Science.

ANSWERS TO CORRESPONDENTS.

W. W. B., Indianapolis, Ind.—Your specimens are as follows: 2, *Onoclea sensibilis;* barren frond, common at the north and south. 3, *Pteris aquilina;* widely distributed. 4, *Asplenium thelypteroides;* found north and south. 5, a species of *Galium.* 6, *Eleocharis olivacea* Torrey. 7, no fruit, and not easily determined. If you mean by the "Snow-plant" *Sarcodes sanguinea,* you will not be able to cultivate it, as it is parasitical in its habits and proves very difficult to rear. Herbariums are not usually published unless of rare and costly character, such as of newly discovered species like Fendler's of Venezuela, Wright's of Cuba, etc.—J. L. R.

H., Danversport, Mass.—The worm declared by your patient to have been found in the wound is a worm allied to the common earthworm, and probably lived in the muddy bottom of a well, spring, or brook, and may possibly have occurred in the water used in dressings. We have kept it alive in the bottle in which you brought it, for four or five days.

W. W. B., Indianapolis.—No. 8 is *Botrychium lunaroides* var. *obliquum;* barren frond. Hooker's Synopsis Filicum, and Presl's Pteridigraphia, are essential in studying the ferns extensively.—J. L. R.

W. C. F., Eastham, Mass.—The frog is *Rana sylvatica.*

EXPLANATION OF PLATE 7.

RADIOLARIA.—Fig. 1. Tetrapyle octacantha. Fig. 2. Haliomma amphidiscus. 3. Haliomma longispinum. 4. Haliomma hexacanthum. 5. Haliomma Humboldtii.

BOOKS RECEIVED.

Scientific Opinion. June, July, Aug., Sept. London.

Journal of Travel and Natural History. Vol. i, No. 6. 1869. London. Two shillings.

Proceedings and Transactions of the Nova Scotian Institute of Natural Science at Halifax, N. S. Vol. ii, Part 2. 1867–8. 8vo. Halifax, 1869.

Second Annual Report of the Trustees of the Peabody Museum of American Archæology and Ethnology. Boston, 1869. 8vo., pp. 23.

Pathogenesis of Ptelea trifoliata; a Report to the American Institute of Homœopathy. By E. M. Hale, M. D. Boston, 1869. 8vo, pp. 85.

American Journal of Numismatics. July. New York.

Library of Education, selected from the best writers of all countries. Scottish University Addresses. By J. S. Mill, Jas. Froude, and T. Carlyle. New York: J. W. Schermerhorn & Co. July, 1869. 32mo, pp. 192. 20 cents.

CORRECTIONS.

In our September number, in the "Chapter on Mites," we suggested that Plate 6, fig. 1, represented the larva of *Dermaleichus,* and that fig. 3 represented the male. We were led to this opinion by the resemblance of fig. 1 to fig. 4, the larva of another genus of mites. After the article went to press we obtained the elaborate memoir of Claparede, entitled "*Studien an Acariden*" published in a recent number of Siebold and Köllikers "Zeitschrift" where he has given a minute account of a neighboring genus, *Myocoptes musculinus* (Koch) found parasitic on mice. After studying Claparede's work we judge that our figure 1 must be a female Dermaleichus, and that fig. 3 represents the male, and fig. 2 the young male.—A. S. P.

On page 368, line 2 from bottom, and on page 373 line 10 from top, for Chelytus *read* Cheyletus. Page 316 line 20 from top, for Euglenia *read* Euglena.

On page 331, line 6 from bottom, for Orange, N. J. *read* Orange, N. Y.

On page 326, line 1 from the bottom, for "Mission County," *read* Mifflin County, Pa.

The author of the article on "Table-mountain Pine" (J. T. Rothrock) also states that Mr. Meehan has since found the same pine on the hills near Harrisburg, Pa., and concludes it is native to the whole interior of the State of Pennsylvania. (See Gardener's Monthly, June, 1867, p. 173.)